

Serial No. 10/659,219  
Atty. Doc. No. 2001P17947WOUS

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Amendments To The Claims:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strike through~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Applicants reserve the right to pursue any cancelled claims at a later date.

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) A method for coating a substrate having at least one hole, comprising:

covering the at least one hole with a plug;

applying at least one layer to a surface of the substrate via a low-temperature coating process; and

irradiating by a high energy beam a near-surface region of the coating layer to improve adhesion of the coating layer to the substrate, and to ensure melting and homogenization of the coating layer and a region of the substrate located directly below the irradiated near-surface region without melting and homogenizing a region of the substrate located laterally adjacent the melted and homogenized substrate region.

2. (previously presented) A method according to Claim 1, wherein the substrate is a turbine blade.

3. (cancelled).

4. (previously presented) A method according to Claim 1, wherein the low-temperature coating process is an electrochemical coating method.

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5. (previously presented) A method according to Claim 1, wherein the temperature for the low-temperature coating process is below 250°C.
6. (currently amended) A method according to Claim 1, wherein irradiation of the near-surface region surface is performed using pulsed electron irradiation.
7. (currently amended) A method according to Claim 1, wherein irradiation of the near-surface region surface is performed using a laser treatment.
8. (currently amended) A method according to Claim 1, wherein during or at the end of irradiation of the near-surface region surface, the plug is removed from the near-surface region of the hole.
9. (previously presented) A method according to Claim 8, wherein the plug is removed by evaporation.
10. (currently amended) A method according to Claim 1, wherein the coating layer is a ceramic heat insulating layer, or an MCrAlY coating where M is selected from the group consisting of iron, cobalt and nickel.
11. (previously presented) A method according to Claim 1, wherein the hole, of which there is at least one, is a film cooling hole or an impingement cooling hole.
12. (previously presented) A method according to Claim 1, wherein the plug is a wax material.
13. (currently amended) A method for coating a turbine component having at least one hole, comprising:
  - covering the at least one hole with a plug;
  - applying at least one layer to a surface of the turbine component via a low-temperature coating process; and

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irradiating by a high energy beam a near-surface region of the coating layer to improve adhesion of the coating layer to the a substrate of the component, and to ensure melting and homogenization of the coating layer and a region of the substrate located directly below the irradiated near-surface region without melting and homogenizing a region of the substrate located laterally adjacent the melted and homogenized substrate region.

14. (previously presented) A method for recoating a substrate, which has already been used and having at least one hole, comprising:

covering the at least one hole with a plug;

applying at least one layer to a surface of the substrate, via a low-temperature coating process; and

irradiating by a high energy beam a near-surface region of the coating layer to improve adhesion of the coating layer to the substrate, and to ensure melting and homogenization of the coating layer and a region of the substrate located directly below the irradiated near-surface region without melting and homogenizing a region of the substrate located laterally adjacent the melted and homogenized substrate region.

15. (currently amended) The method according to Claim 1, wherein the melted substrate is only partially melted in a local region of the irradiation that is adjacent to the region of the substrate located directly below the irradiated near-surface region.

16. (currently amended) The method according to Claim 1, wherein the near-surface region of the coating layer is scanned over a period of time by the high energy beam.

17. (previously presented) The method according to Claim 5, wherein the temperature for the low-temperature coating process is below 100°C.

18. (previously presented) The method according to Claim 17, wherein the temperature for the low-temperature coating process is 50°C.